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(54) **Mounting mechanisms for cloth rolls on press cylinder cleaning devices**

Montagemechanismus für Textilrollen für Walzenwaschvorrichtungen

Mécanisme de montage pour les rouleaux de matière textile pour dispositifs de nettoyage d'un cylindre

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Description

[0001] The present invention relates generally to cleaning systems for use in cleaning a cylinder of a printing press and, more particularly, to mounting mechanisms for cloth rolls on press cylinder cleaning devices.

[0002] In the past, cleaning systems have been used for cleaning a press cylinder of a printing press. In particular, systems have been used wherein a supply of cleaning cloth, which is disposed around a supply core and supply shaft, is fed through a cleaning apparatus to contact and clean a press cylinder. After use, the used cleaning cloth is taken-up on a take-up shaft. Such a system is disclosed in U.S. Patent No. 5,176,080 to Gasparrini et al.

[0003] In use, a cylinder-operated take-up shaft is used to rotate the shaft, thereby drawing cleaning cloth from a supply roll towards the take-up shaft. This incremental cloth advancing system is utilized to prevent an excessive amount of cleaning cloth from being drawn off of the supply roll, thereby preventing excess cleaning cloth usage and interference with the printing system. In order for such an incremental cloth advancing system to be effective, relative rotation between the supply core and supply shaft must be prevented. To date, a jaw system has been utilized to couple the supply core to the supply shaft to prevent relative rotation therebetween. This jaw system utilizes a series of pins or jaws to simultaneously grip both the supply shaft and the supply core. This assembly has a brake mechanism and, once the assembly is coupled to the shaft sockets, an applied spring rewind force.

[0004] The use of such jaws, however, has proven inadequate at times to insure the prevention of relative rotation between the supply shaft and the supply core in view of a problem known as core shrinkage. Core shrinkage is a problem which results from the manufacturing process and materials used to make a supply core. This problem results in a particular supply core being shorter than a supply shaft on which the core is to be mounted. Accordingly, if an attempt is made to utilize the jaws to couple the shorter core to the longer shaft, the jaws are incapable of coupling the core to the shaft in view of the shortened length of the core. In particular, because the jaws are unable to adequately reach the core as the jaws are being mounted onto the shaft, the core remains uncoupled to the shaft. Therefore, as a cylinder causes the take-up shaft to index in an attempt to draw cleaning material off of the supply core, the incremental advancing system associated with the supply shaft will fail to prevent excess cleaning cloth from feeding into the printing system, since the brake and spring rewind are ineffective when the core remains uncoupled to the shaft. Rather, as the take-up shaft rotates, the supply core can rotate with respect to the supply shaft thereby feeding an excessive amount of cleaning cloth into the system. Accordingly, the printing system may jam in view of this excess cleaning cloth. As such, this excess amount of cleaning material is wasted when the supply core is not properly coupled to the supply shaft.

[0005] Accordingly, there exists a need to address the core shrinkage problem to assure proper press cylinder cleaning and to alleviate system jamming during use of such cleaning systems for press cylinders.

[0006] Other problems also exist in present day cleaning systems for press cylinders. In particular, the systems currently use a take-up roll having a serrated surface which provides an exceptionally jagged frictional surface so that cleaning cloth will stick to the take-up shaft as that shaft rotates. The use of such a jagged surface prevents relative rotation between the used cleaning material and the take-up shaft as the take-up shaft rotates. Accordingly, as the cylinder rotates the take-up shaft, the used cleaning cloth adheres to the jagged surface of the take-up shaft thereby drawing additional cleaning material off of the supply core as the take-up roll rotates.

[0007] However, the use of such a jagged frictional surface, particularly when the take-up shaft is metal, can be a nuisance to a user. Accordingly, there exists a need to prevent relative rotation between used cleaning cloth and a take-up shaft without exposing a user to possible cuts and scratches.

[0008] Another problem associated with current cleaning systems for press cylinders is the difficulty associated with removing the supply or take-up shafts during an exchange of cleaning cloth. Accordingly, there exists a need for an enhanced engagement system which facilitates removal and reinsertion of the supply and take-up shafts during an exchange of cleaning cloth.

[0009] EP-A-0 539771 and EP-A-0 611651 disclose means to prevent relative rotation between the supply core and the supply shaft. The means comprises a rubber member attached to the supply core to frictionally engage the inner surface of the supply core.

[0010] The present invention fulfils the aforementioned needs.

[0011] According to the present invention there is provided a cleaning material supply apparatus for a press cylinder, comprising a supply shaft, a supply core and sheet cleaning material wound on the supply core, the supply core being disposed on the supply shaft and coupled for rotation therewith, characterised in that the supply core is coupled to the supply shaft through a keying engagement of an internal key structure on the supply core with a corresponding outer key structure on the supply shaft, configured to prevent relative rotation therebetween upon rotation of the shaft.

[0012] The internal key structure on the supply core may have a cross-section with a centre point and a perimeter, the perimeter having at least two points disposed at different distances from the centre.

[0013] The supply core may have an external structure with an external cross-sectional shape which is different from the internal cross-sectional shape of the supply core.

[0014] The internal key structure of the supply core may have an internal structure with an internal polygonal cross-sectional shape.

[0015] Preferably the internal polygonal cross-sectional shape of the supply cor may hav three, four, five or six sides.

[0016] Accordingly internal structure of the supply core may have an internal structure with an oval cross-section.

[0017] The external key structure of the supply shaft may have a cross-section with a centre point and a perimeter, the perimeter having at least two points disposed at different distances from the centre.

[0018] The supply shaft may have an external structure with an external polygonal cross-section shape.

[0019] The apparatus may further comprise a housing in which the supply shaft is rotatably mounted and a take-up shaft wherein take-up shaft rotatably mounted in communication with the housing.

[0020] Preferably the take-up shaft has a cross-section with a centre point and a perimeter, the perimeter having at least two points disposed at different distances from the centre.

[0021] The supply shaft may have an external structure with an external polygonal cross-section.

[0022] Preferably the external polygonal cross-section may have three, four, five or six sides.

[0023] Accordingly the supply shaft may have an external structure with an external oval cross-section.

[0024] The housing may comprise a locking finger having an unlocked position and a locked position, wherein the take-up shaft is rotatably coupled to the housing via the receiving slot when the movable locking finger is in the locked position.

[0025] Preferably the take-up shaft is configured to receive the cleaning material after the cleaning material has been used to clean the printing press.

[0026] Accordingly the supply core may have first and second ends the supply shaft may have first and second ends and may further comprise a first plug mounted on the first end of the shaft, and a second plug mounted on the second end on the shaft, a portion of each of the plugs being disposed within the supply shaft, and a portion of each of the plugs being disposed outside the supply shaft and extending beyond a periphery on the supply shaft to prevent the supply core from sliding off the supply shaft.

[0027] The press cylinder cleaning material may be a cloth fabric or paper.

[0028] The internal and external key structures may comprise a key member and a corresponding receptacle for the key member, the key member being movable in and out of keying engagement with the receptacle.

[0029] Preferably the key member passes through a side wall of the supply shaft.

[0030] Accordingly the key receptacle is a slot cut into the supply core.

[0031] The supply shaft may have an internal lumen formed by at least on sidewall of the supply shaft, the supply shaft having a k y slot passing from the internal lumen through the sidewall.

[0032] Pr ferably at least a portion of the key member is disposabl in the key slot, th key member having an unlocked position in which th key member is maintained within an outer surface of the supply shaft and the key member having a locked position in which the key member protrudes beyond the supply shaft and into the key slot of the supply core to couple the supply core to the supply shaft.

[0033] Preferably at least a portion of a plug is disposable within the lumen of the supply shaft at least a portion of the plug extends beyond the supply shaft to maintain the supply core on the supply shaft.

[0034] The apparatus further comprise a slidable cam disposed within the lumen of the supply shaft, the slidable cam operatively associated with the key member and the plug, the slidable cam having an unengaged position corresponding to the unlocked position of the key member, the slidable cam having an engagede position corresponding to the locked position of the key member.

[0035] The slidable cam may have a tapered portion in engagement with the key member.

[0036] According to the present invention there is provided a method of supplying cleaning material to clean a cylinder of a printing press, comprising engaging a supply core having cleaning material wound thereon, with a supply shaft, rotating the supply shaft to unravel the cleaning material, and passing the cleaning material through a cylinder cleaning apparatus in communication with the printing press characterised in that the engaging of the supply core with the supply shaft comprises coupling the supply shaft through a keying engagement of an internal key structure on the supply core with a corresponding outer key structure on the supply shaft, configured to prevent relative rotation therebetween upon rotation of the shaft.

[0037] Accordingly engaging the supply core with the supply shaft may comprise mounting the supply core on a supply shaft having an external structure with a polygonal cross-section.

[0038] The method may further comprise placing plugs within first and second ends of supply shaft to prevent the supply core from sliding off of the supply shaft during rotation of the supply shaft.

[0039] The method may further comprise receiving the unraveled cleaning material on a rotating take-up roll having an external cross-section with a polygonal shapes.

[0040] Preferably the engaging comprises placing the cleaning material supply core around the cleaning material supply shaft and engaging a key to couple the cleaning material supply core to cleaning material supply shaft.

[0041] Embodiments of the present invention will now be described, by way of xample, with reference to th accompanying drawings in which:-

[0042] Figure 1 is an overall view of a cleaning system of the present inv ntion.

[0043] Figure 2 is a sid wall of a supply cor disposed about a supply shaft (in dotted lines) of the present invention as shown in isolation from th remaining elements of the cleaning system of the pr sent invention.

[0044] Figure 3A is a cross-sectional view of one embodiment of the present invention along lines 3-3 of figure 2.

[0045] Figure 3B is another cross-sectional view of an additional embodiment of the present invention along lines 3-3 of figure 2.

[0046] Figure 3C is a cross-sectional view of another embodiment of the present invention along lines 3-3 of figure 2.

[0047] Figure 3D is a cross-sectional view of another embodiment of the present invention along lines 3-3 of figure 2.

[0048] Figure 3E is a cross-sectional view of another embodiment of the present invention along lines 3-3 of figure 2.

[0049] Figure 3F is a cross-sectional view of another embodiment of the present invention along lines 3-3 of figure 2.

[0050] Figure 4 is a side view of the take-up shaft of the present invention as shown in isolation from the remaining elements of the cleaning system of the present invention.

[0051] Figure 5A is a cross-sectional view of one embodiment of the present invention along lines 5-5 of figure 4.

[0052] Figure 5B is another cross-sectional view of an additional embodiment of the present invention along lines 5-5 of figure 4.

[0053] Figure 5C is a cross-sectional view of another embodiment of the present invention along lines 5-5 of figure 4.

[0054] Figure 5D is a cross-sectional view of another embodiment of the present invention along lines 5-5 of figure 4.

[0055] Figure 6 is a side view of another embodiment of the present invention utilizing a key system.

[0056] Figure 7 is a top view of the embodiment shown in figure 6 of the present invention utilizing a key system.

[0057] Figure 8 is a cross-sectional view along the line 8-8 of figure 6 of the embodiment of the present invention utilizing a key system.

[0058] Figure 9 is a cross-sectional view along the lines 9-9 of figure 6 of the embodiment of the present invention utilizing a key system.

[0059] Figure 10 is a perspective view of a supply core with a key receiver to receive a key of a supply shaft in accordance with another embodiment of the present invention.

[0060] Figur 11 is a perspectiv view of a two plugs and a supply shaft with a k y in th form of a protrusion extending from th shaft to be placed within the key r - ceiver of figure 10.

[0061] Figur 12 is a side view of a supply shaft and supply cor having a key system in th form of a plurality of notches disposed on the shaft and cor in accordance with another embodiment of th present invention.

[0062] Figur 13 is a sid view of an additional featur of the present invention along the lines 13-13 of figure 1.

[0063] With reference to figure 1, a view of a cleaning system 10 for a press cylinder of a printing press is disclosed. The cleaning system 10 comprises generally a rotatable supply shaft 20, a supply ore 30, a take-up shaft 40 and a housing 50, each of which will now be described in greater detail below.

[0064] With continuing reference to Figure 1, rotatable shaft 20 is shown as it extends from a first end 60 to a second end 70. Preferably, rotatable supply shaft 20 generally has a solid structure except for a hollow portion at each end for receiving a portion of a plug. A first plug 80 is disposed at and within first end 60 of rotatable supply shaft **20**. A second plug **90** is disposed at and within second end **70** of rotatable supply shaft **20**. Each of these plugs **80,90** has a portion disposed in a hollow end portion of rotatable supply shaft **20**. Each of these plugs **80,90** also has laterally extending side portions which extend beyond the circumference of rotatable supply shaft **20** to prevent a supply core **30**, which is disposed around rotatable supply shaft **20**, from sliding off of rotatable supply shaft **20**. Each plug **80,90** also has a socket-engaging portion **100,110** which allows the plugs (and therefore rotatable supply shaft **20**) to engage within rotatable sockets **120,130**. Once engaged, the supply shaft **20** and plug arrangement can move/rotate with respect to the sockets **120,130** under brake load and spring rewind tensions. Rotatable sockets **120,130** are rotatably disposed within housing **50** such that, when a rotational force is applied to rotatable supply shaft **20**, rotatable supply shaft **20**, in conjunction with plugs **80,90** and sockets **120,130,** rotate about a rotational axis **140** of rotatable supply shaft **20**.

[0065] Preferably, rotatable shaft supply **20** is made of aluminum. Plugs **80,90** and sockets **120,130** are preferably made of plated steel and housing **50** is preferably made of aluminum. It is to be understood, however, that other suitable materials may be used for these elements.

[0066] With continuing reference to figure 1, supply core **30** is shown disposed around rotatable supply shaft **20**. As with rotatable supply shaft **20**, supply core **30** extends from a first end **150** to a second end **160**. Supply core **30** has an internal elongated hole which extends from first end **150** to second end **160** for receiving rotatable supply shaft **20** therein. Preferably, supply core **30** is made of cardboard, although it is to be understood that other suitable materials may be used.

[0067] Disposed about supply core **30** is an amount of cleaning material **170**. Pr ferably, this cleaning material **170** is such as those disclos d in U.S. Patent No. 5,368,157, herein incorporated by refer nc , although

it is to be understood that other types of cleaning materials **170**, such as cleaning films, may be used.

[0068] With referenc to figures 2 and 3A-3F, vi ws of th supply core **30** dispos d about a supply shaft **20** ar shown in isolation from th remaining el ments of the cleaning system **10** of the pr s nt invention. With particular reference to figures 3A-3F, various embodiments of the present invention are shown. In general, the rotatable supply shaft **20** has an outer cross-sectional shape **180** and the supply core **30** has an inner cross-sectional shape **190** which couples the rotatable supply shaft **20** with the supply core **30** to prevent relative rotation therebetween. As can be seen in these figures, rotatable supply shaft **20** has an cross-section with a polygonal (figs. 3A-3E) or oval (fig. 3F) outer shape, while supply core **30** has a cross-section with a polygonal (figs. 3A-3E) or oval (fig. 3F) inner shape. In particular, the outer cross-sectional shape **180** of the supply shaft **20** and the inner cross-sectional shape **190** of the supply core **30** may be triangular (figure 3A), rectangular (figure 3B), pentagonal (figure 3C), hexagonal (figure 3D) or oval (figure 3F). As shown in figure 3E, it is to be understood that the external cross-sectional shape of the supply core **30** may vary from the internal cross-sectional shape of the supply core **30**. Accordingly, in Figure 3E, a core with a round external shape and an internal cross-sectional square shape is shown. Accordingly, the core may outwardly appear to be a cylindrical shape, while the internal structure may have a non-cylindrical shape.

[0069] In sum, the outer cross-sectional shape **180** of the supply shaft **20** and the inner cross-sectional shape **190** of the supply shaft **20** may be any non-circular shape. A circle, by definition, is a closed plane curve every point of which is equidistant from a fixed point (the center) of the curve. Accordingly, a non-circular shape has a center point and a perimeter whereby the perimeter has at least two points disposed at different distances from the center. As such, the outer cross-sectional shape **180** of the supply shaft **20** and the inner cross-sectional shape **190** of the supply core **30** may be any shape which has a center point and a perimeter whereby the perimeter has at least two points disposed at different distances from the center.

[0070] It is also to be understood that the outer cross-sectional shape **180** of the supply shaft **20** need not be the same as the inner cross-sectional shape **190** of the supply core **30** provided that these shapes cause the supply shaft **20** and supply core **30** to couple so as to prevent relative rotation therebetween.

[0071] In use, such a structural arrangement allows the rotatable supply shaft **20** and supply core **30** to rotate in unison thereby facilitating the dispensing of cleaning material **170** as the supply shaft **20** and supply core **30** rotate together.

[0072] With reference to figure 1, 4 and 5A-5D, a rotatable take-up shaft **40** of the pr sent invention is shown. The rotatable take-up shaft **40** extends from a first nd **192** to a second end **194**. Disposed at each respectiv end is a protrusion **196,198** disposed in communication with the housing **50**. As shown in figur s 5A-5D, the take-up shaft **40** pref rably has a polygonal shap such as triangular (fig.5A), rectangular (fig.5B), pentagonal (fig.5C) or hexagonal (fig. 5D), so that used cleaning material **170** may be wound around the take-up shaft **40** without needing to resort to a rough jagged surface texture on the take-up shaft **40**. As with the supply shaft **20** and supply core **30**, the take-up shaft **40** may assume various non-circular shapes.

[0073] With reference to figure 1, cylinder **199** is disposed in communication with a take-up shaft **40** to rotate the take-up shaft **40** during cleaning of a press cylinder. In use, the cylinder **199** rotates the take-up shaft **40** thereby drawing cleaning material **170** off the supply core **30** and rotating the supply core **30** and supply shaft **20** (in conjunction with the incremental advancing system disclosed in U.S. Patent No. 5,176,080).

[0074] Preferably, take-up shaft **40** is made of aluminum although it is to be understood that other suitable materials may be used.

[0075] With reference to figures 6-9, an alternate embodiment of the present invention utilizing a key system is shown. In this embodiment, a supply shaft **200** is coupled to a supply core **210** by utilizing a key system. As best seen in figure 8, the supply core **210** contains key slots or key receivers **220,230** for receiving keys **240,250**. As best seen in figures 8 and 9, the supply shaft **200** has an internal lumen **260** which contains essential elements of the key system. The supply shaft **200** also contains slots **270,280** in its sidewall. In general, as best seen in figure 9, the keys **240,250** pass through slots **270,280** to engage the supply core **210** via key receivers **220,230** to couple the supply shaft **200** to the supply core **210** to prevent relative rotation therebetween. While the key receivers **220,230**, at a minimum, must be large enough to receive the keys **240,250**, the key receivers **220,230** are preferably somewhat larger than this minimum size so as to provide a clearance gap to facilitate manufacturing tolerances for the supply shaft **200**, supply core **210** and key system.

[0076] With continuing reference to figures 8 and 9, a transverse pin **290** is preferably utilized to prevent the key system from being pushed too deeply into the lumen **260**. In the alternative, the supply shaft **200** may simply be made solid in the region to the right of the transverse pin **290** in figure 8 so as to maintain the entire key system to the left thereof. A spring **300** is disposed to the left of the transverse pin **290** in figure 8. This spring **300** may be attached at one end to the transverse pin **290** via clip. The other end of the spring **300** is placed into contact with a slidable camming member **310**. Preferably, the spring **300** is attached to at least transverse pin **290** or the slidable camming member **310** to assure that the spring **300** is always disposed between the slidable camming member **310** and the transverse pin **290**. Such an arrangement assures that the spring **300** will impart a force against th slidable camming member **310** and

the transverse pin **290** as the camming member **310** is slid from retracted (unlocked) position, as shown in figur 8, to a locked position, as shown in figur 9.

[0077] Slidabl camming member **310** has a first inclined camming surface **320** to ngage a first key **240**, and a second inclined camming surface **330** to engage a second key **250**. Slidable camming member **310** also has an elongated neck **340** disposed between its inclined surfaces **320,330**. In addition, slidable camming member **310** has a slot **350** to receive a fixed pin **360**. As slidable camming member **310** slides from the unlocked position of figure 8 to the locked position of figure 9, this fixed pin **360** engages the ends of the slot **350** to prevent further movement of the slidable camming member **310** within the lumen **260** of the supply shaft **200**.

[0078] With continuing reference to figures 8 and 9, a first key **240** having an inclined surface **370** and a second key **250** having an inclined surface **380** are also shown. The inclined surface **370** of the first key **240** is configured to engage the first inclined camming surface **320** of the slidable camming member **310**. The inclined surface **380** of the second key **250** is configured to engage the second inclined camming surface **330** of the slidable camming member **310**. Each of theses keys **240,250** has a pin for engaging a spring **390** which imparts a force drawing the two keys **240,250** together. As such, when the key system is in the unlocked position, both springs **300,390** act to force slidable camming member **310** toward its leftmost position as shown in figure 8. While spring **300** imparts a force urging the slidable camming member **310** into this position, spring **390** also pulls the keys **240,250** together thereby causing the inclined surfaces **370,380** of the keys **240,250** to engage the inclined surfaces **320, 330** of the slidable camming member **310** to urge the slidable camming member **310** into this unlocked position.

[0079] To urge the slidable camming member **310** from this unlocked position to the locked position shown in figure 9, a plug **400** having a plunger **410**, a laterally extending protrusion **420** and a locking pin **430** is preferably used. The plunger **410** is dimensioned to be received within the lumen **260** of the supply shaft **200**. As the plunger **410** enters the lumen **260**, the plunger **410** engages the slidable camming member **310**. As a user continues to push the plunger **410** into the lumen **260**, the slidable camming member **310** is forced from its unlocked position to its locked position. As the slidable camming member **310** is forced into this locked position, first inclined camming surface **320** engages the inclined surface **370** of the first key **240**, and second inclined camming surface **320** engages the inclined surface **380** of the second key **250**, thereby forcing the keys **240,250** to slide through the slots **270,280** disposed in the sidewall of the supply shaft **200**, and into the key receivers **220,230** of the supply core **210**. The plunger **410** is pr ferably as long as (1) the slot **350** plus (2) any distance between the end of the slidable plunger **410** and the end of the supply shaft **200**. Th laterally extending protrusion **420** of th plug **400** extends beyond the circumferenc of the supply shaft **200** so that th protrusion **420** assists in preventing the supply cor **210** from sliding off the supply shaft **200**. However, because the key system prevents the supply cor **210** from sliding off the supply shaft **200**, the plug **400** need not have such a laterally extending side member. The plug **400** also has a locking pin **430** which is slid through a locking pin receiving slot **440** in the sidewall of the supply shaft **200** to a locking slot **450** which is also in the sidewall of the supply shaft **200**. To lock the plug **400** onto the first end **60** of the supply shaft **200**, the plug **400** need only be turned a small amount such that the locking pin **430** enters the locking slot **450** and engages the sidewall of the supply shaft **200** surrounding this locking slot **450**. It should be noted that such a key system can be built with only one key and one slot in the core and shaft, rather than two key/two slot arrangement shown in the drawings.

[0080] Preferably, plated steel and other metallic materials are to be used in such a key system, although it is to be understood that other suitable materials may be used.

[0081] With reference to figures 10 and 11, another embodiment of the present invention also utilizing a key system is disclosed is shown. In this embodiment, the key **500** protrudes from the sidewall of the supply shaft **510**. This key **500** may be integral with this sidewall. This key **500** is received in a key receiver or slot **520** in the supply core **530** which extends from the end of the supply core **530** to an intermediate point (between the ends) of the supply core **530**. Although two plugs **540,550** are shown in the embodiment of figures 10 and 11, it is to be understood that the first plug **540** shown in figure 11 is unnecessary to keep the supply core **530** from sliding off the supply shaft **510** (the key system adequately prevents the supply core **530** from sliding off of the supply shaft **510** at that end). Once this supply core **530** is slid onto this supply shaft **510** so that the key **500** is received in the key receiver **520**, relative rotation between the supply shaft **510** and supply core **530** is prevented.

[0082] With reference to figure 12, another embodiment of the present invention is shown. In this embodiment, a supply shaft **600** and supply core **610** have a key system in the form of a plurality of notches **620,630** disposed on the shaft **600** and core **610**, respectively, to prevent relative rotation therebetween.

[0083] With reference to figure 13, a unique arrangement for rotatably coupling the take-up shaft **40** to the housing **50** is shown. In this arrangement, the take-up shaft **40** may be slid into housing **50** via a slot **700**. Once the take-up shaft **40** is disposed in communication with housing **50** via slot **700**, a tightening screw **710** may be used to tighten a movable locking finger **720** from an unlocked position to a locked position. Th unlocked position of movable locking finger 720 is shown in phantom in figure 13 while th locked position is shown in solid

lines in figur 13. Such an 5 arrangement may also be used to dispose the supply shaft in communication with the housing 50.

[0084] It will b appreciated that many modification can be mad to the embodiments described abov without departing from th scope of the invention as defined by the appended claims.

Claims

1. A cleaning material supply apparatus for a press cylinder, comprising: a supply shaft (20,200), a supply core, and sheet cleaning material (170) wound on the supply core the supply core (30,210) being disposed on the supply shaft and coupled for rotation therewith, **characterised in that** the supply core is coupled to the supply shaft through a keying engagement of an internal key structure on the supply core with a corresponding outer key structure on the supply shaft, configured to prevent relative rotation therebetween upon rotation of the shaft.

2. Apparatus according to claim 1 wherein the internal key structure (190) on the supply core (30,210) has a cross-section with a centre point and a perimeter, the perimeter having at least two points disposed at different distances from the centre.

3. Apparatus according to claim 1 wherein the supply core (30,210) has an external structure (180) with an external cross-sectional shape which is different from the internal cross-sectional shape of the supply core.

4. Apparatus according to either claim 1 or 2 wherein the internal key structure (190) of the supply core (30,210) has an internal polygonal cross-sectional shape.

5. Apparatus according to claim 4 wherein the internal polygonal cross-sectional shape (190) of the supply core (30,210) has three, four, five or six sides.

6. Apparatus according to either claim 2 or 3 wherein the supply core has an internal key structure (190) of an oval cross-section.

7. Apparatus according to any one of claims 2 to 6 wherein the external key structure of the supply shaft (20,200) has a cross-section with a centre point and a perimeter, the perimeter having at least two points disposed at different distances from the centre.

8. Apparatus according to claim 7 wh rein the supply shaft (20,200) has an external structure with an external polygonal cross-s ction shape.

9. Apparatus according to any preceding claim further comprising a housing (50) in which th supply shaft (20,200) is rotatably mounted and a take-up shaft (40) wherein the take-up shaft is rotatably mounted in communication with the housing.

10. Apparatus according to claim 9 wherein the take-up shaft (40) has a cross-section with a centre point and a perimeter, the perimeter having at least two points disposed at different distances from the centre.

11. Apparatus according to claim 9 or 10 wherein the supply shaft (20,200) has an external structure with an external polygonal cross-section.

12. Apparatus according to claim 11 wherein the external polygonal cross-section has three, four, five or six sides.

13. Apparatus according to claim 10 wherein the supply shaft (20,200) has an external structure with an external oval cross-section.

14. Apparatus according to any one of claims 9 to 13 wherein the housing (50) comprises a receiving slot and a movable locking finger, the movable locking finger having an unlocked position and a locked position, wherein the take-up shaft (40) is rotatably coupled to the housing via the receiving slot when the movable locking finger is in the locking finger locked position.

15. Apparatus according to any one of claims 9 to 14 wherein the take-up shaft (40) is configured to receive the cleaning material (170) after the cleaning material has been used to clean the printing press.

16. Apparatus according to any preceding claim wherein the supply core (30,210) has first and second ends (150,160) the supply shaft (20) has first and second ends (60,70) and further comprises a first plug (80,410) mounted on the first end (60) of the shaft, and a second plug (90,420) mounted on the second end (70) of the shaft, a portion of each of the plugs being disposed within the supply shaft, and a portion of each of the plugs being disposed outside the supply shaft and extending beyond a periphery of the supply shaft to prevent the supply core from sliding off the supply shaft.

17. Apparatus according to any preceding claim wherein the press cylinder cleaning material (170) is a cloth fabric.

18. Apparatus according to any one of claims 1 to 16 wherein the press cylinder cleaning material (170) is paper.

19. Apparatus according to claim 1 wherein the internal and xternal key structures compris a key member (240,250) and a corresponding receptacle (220,230) for the k y member, th key member b - ing movabl in and out of the keying engag ment with the receptacle.

20. Apparatus according to claim 19 wherein the key member is configured to pass through a side wall of the supply shaft (20,200).

21. Apparatus according to either claim 19 or 20 wherein the key receptacle (220,230) is a slot cut into the supply core (30,210).

22. Apparatus according to any one of claims 19 to 21 wherein the supply shaft(20,200) has an internal lumen (260) formed by at least one sidewall of the supply shaft, the supply shaft having a key slot (270,280) passing from the internal lumen through the sidewall.

23. Apparatus according to claim 22 wherein at least a portion of the key member (240,250) is disposable in the key slot (270,280), the key member having an unlocked position in which the key member is maintained within an outer surface of the supply shaft (20,200) and the key member having a locked position in which the key member protrudes beyond the supply shaft and into the key slot of the supply core (30,210) to couple the supply core to the supply shaft.

24. Apparatus according to claim 22 or 23 wherein at least a portion of a plug (80,400,410) is disposed within the lumen (260) of the supply shaft (20,200) and at least a portion of the plug (90,400,420) extends beyond the supply shaft to maintain the supply core (30,210) on the supply shaft.

25. Apparatus according to claim 24 further comprising a slidable cam (310) disposed within the lumen (260) of the supply shaft (20,200), the slidable cam operatively associated with the key member (240,250) and the plug (400), the slidable cam having an unengaged position corresponding to the unlocked position of the key member and the slidable cam having an engaged position corresponding to the locked position of the key member.

26. Apparatus according to claim 25 wherein the slidable cam (310) has a tapered portion (370,380) in engagement with the key member(240,250).

27. A method of supplying cleaning material (170) to clean a cylinder of a printing press, comprising:

engaging a supply core having cleaning material wound th r on, with a supply shaft (20,200);

rotating th supply shaft to unrav l the cleaning material; and

passing th cleaning mat rial through a cylinder cleaning apparatus in communication with the printing press **characterised in that** the engaging the supply core with the supply shaft comprises coupling the supply shaft through a keying engagement of an internal key structure on the supply core with a corresponding outer key structure on the supply shaft, configured to prevent relative rotation therebetween upon rotation of the shaft.

28. A method according to claim 27 wherein engaging the supply core (30,210) with the supply shaft (20,200) comprises mounting the supply core on a supply shaft having external structure with a polygonal cross-section.

29. A method according to either claim 27 or 28 further comprising:

placing plugs (80,90) within first and second (60,70) ends of the supply shaft (20,200) to prevent the supply core (30,210) from sliding off of the supply shaft during rotation of the supply shaft.

30. A method according to any one of claim 27 to 29 further comprising:

receiving the unraveled cleaning material (170) on a rotating take-up roll (40) having an external cross-section with a polygonal shape.

31. A method according to claim 27 wherein the engaging the supply core (30,210) with a supply shaft (20,200) comprises:

placing the supply core around the cleaning material supply shaft (20, 200); and

engaging a key to couple the cleaning material supply core to cleaning material supply shaft.

Patentansprüche

1. Reinigungsmaterial-Zufuhrvorrichtung für einen Druckzylinder, mit einer Zufuhrwelle (20, 200), einem Zufuhrkern und einem Reinigungsgewebematerial (170), das auf den Zufuhrkern gewickelt ist, wobei der Zufuhrkern (30, 210) auf der Zufuhrwelle angeordnet und zur Drehung damit gekoppelt ist, **dadurch gekennzeichnet, dass** der Zufuhrkern durch einen Schlosseingriff einer inneren Schlüsselstruktur auf dem Zufuhrkern in eine entsprechende äußer Schlüss lstruktur auf der Zufuhrwelle, gestaltet, eine Relativdrehung dazwischen bei Drehung der Welle zu verhind rn, mit der Zu-

fuhrwelle gekoppelt ist.

2. Vorrichtung nach Anspruch 1, bei der die innere Schlüsselstruktur (190) auf dem Zufuhrkern (30, 210) einen Querschnitt mit ein m Mittelpunkt und einer äußer n Begrenzung hat, wob i die äußere Begrenzung mindestens zwei Punkte hat, die in verschiedenen Abständen vom Mittelpunkt liegen.

3. Vorrichtung nach Anspruch 1, bei der der Zufuhrkern (30, 210) eine äußere Struktur (180) mit einer äußeren Querschnittsform hat, die von der inneren Querschnittsform des Zufuhrkerns verschieden ist.

4. Vorrichtung nach einem der Ansprüche 1 oder 2, bei der die innere Schlüsselstruktur (190) des Zufuhrkerns (30, 210) eine innere polygonale Querschnittsform hat.

5. Vorrichtung nach Anspruch 4, bei der die innere polygonale Querschnittsform (190) des Zufuhrkerns (30, 210) drei, vier, fünf oder sechs Seiten hat.

6. Vorrichtung nach einem der Ansprüche 2 oder 3, bei der der Zufuhrkern eine innere Schlüsselstruktur (190) mit einem ovalen Querschnitt hat.

7. Vorrichtung nach einem der Ansprüche 2 bis 6, bei der die äußere Schlüsselstruktur der Zufuhrwelle (20, 200) einen Querschnitt mit einem Mittelpunkt und einer äußeren Begrenzung hat, wobei die äußere Begrenzung mindestens zwei Punkte hat, die in verschiedenen Abständen vom Mittelpunkt liegen.

8. Vorrichtung nach Anspruch 7, bei der die Zufuhrwelle (20, 200) eine äußere Struktur mit einer äußeren polygonalen Querschnittsform hat.

9. Vorrichtung nach einem der vorhergehenden Ansprüche, die weiterhin ein Gehäuse (50), in dem die Zufuhrwelle (20, 200) drehbar gelagert ist, und eine Aufwickelwelle (40) aufweist, wobei die Aufwickelwelle in Verbindung mit dem Gehäuse drehbar gelagert ist.

10. Vorrichtung nach Anspruch 9, bei der die Aufwickelwelle (40) einen Querschnitt mit einem Mittelpunkt und einer äußeren Begrenzung hat, wobei die äußere Begrenzung mindestens zwei Punkte hat, die in verschiedenen Abständen vom Mittelpunkt liegen.

11. Vorrichtung nach Anspruch 9 oder 10, bei der die Zufuhrwelle (20, 200) eine äußere Struktur mit einem äußer n polygonal n Querschnitt hat.

12. Vorrichtung nach Anspruch 11, b i der der äußere polygonale Querschnitt drei, vier, fünf oder sechs Seit n hat.

13. Vorrichtung nach Anspruch 10, bei der die Zufuhrw lle (20, 200) ein äußer Struktur mit einem äußeren oval n Querschnitt hat.

14. Vorrichtung nach einem der Ansprüche 9 bis 13, bei der das Gehäuse (50) einen Aufnahmeschlitz und einen beweglichen Sperrfinger mit einer verriegelten Stellung und einer entriegelten Stellung aufweist, wobei die Aufwickelwelle (40) über den Aufnahmeschlitz drehbar mit dem Gehäuse gekoppelt ist, wenn der bewegliche Sperrfinger in seiner verriegelten Stellung ist.

15. Vorrichtung nach einem der Ansprüche 9 bis 14, bei der die Aufwickelwelle (40) gestaltet ist, das Reinigungsmaterial (170) aufzunehmen, nachdem das Reinigungsmaterial zum Reinigen der Druckpresse benutzt worden ist.

16. Vorrichtung nach einem der vorhergehenden Ansprüche, bei der der Zufuhrkern (30, 210) erste und zweite Enden (150, 160) hat und die Zufuhrwelle (20) erste und zweite Enden (60, 70) hat und weiterhin einen ersten Stopfen (80, 410), der am ersten Ende (60) der Welle angebracht ist, und einen zweiten Stopfen (90, 420) aufweist, der am zweiten Ende (70) der Welle angebracht ist, wobei ein Teil jedes Stopfens innerhalb der Zufuhrwelle angeordnet ist und ein Teil jedes Stopfens außerhalb der Zufuhrwelle liegt und sich über eine äußere Begrenzung der Zufuhrwelle hinaus erstreckt, um zu verhindern, dass der Zufuhrkern von der Zufuhrwelle abrutscht.

17. Vorrichtung nach einem der vorhergehenden Ansprüche, bei der das Pressenzylinder-Reinigungsmaterial (170) ein Textilgewebe ist.

18. Vorrichtung nach einem der Ansprüche 1 bis 16, bei der das Pressenzylinder-Reinigungsmaterial (170) Papier ist.

19. Vorrichtung nach Anspruch 1, bei der die inneren und äußeren Schlüsselstrukturen ein Schlüsselglied (240, 250) und eine entsprechende Aufnahme (220, 230) für das Schlüsselglied aufweisen, wobei das Schlüsselglied in den und aus dem Schlosseingriff mit der Aufnahme beweglich ist.

20. Vorrichtung nach Anspruch 19, bei der das Schlüsselglied gestaltet ist, durch eine Seitenwand der Zufuhrwelle (20, 200) zu passen.

21. Vorrichtung nach einem der Anspruch 19 oder 20, bei der di Schlüss laufnahme (220, 230) ein in den

Zufuhrkern (30, 210) geschnittener Schlitz ist.

22. Vorrichtung nach einem der Ansprüche 19 bis 21, bei der die Zufuhrwelle (20, 200) einen inneren Hohlraum (260) hat, der durch mindestens eine Seitenwand der Zufuhrwelle gebildet wird, wobei die Zufuhrwelle einen Schlüsselschlitz (270, 280) hat, der von dem inneren Hohlraum aus durch die Seitenwand verläuft.

23. Vorrichtung nach Anspruch 22, bei der mindestens ein Teil des Schlüsselgliedes (240, 250) im Schlüsselschlitz (270, 280) angeordnet werden kann, wobei das Schlüsselglied eine entriegelte Stellung hat, in der das Schlüsselglied innerhalb einer Außenfläche der Zufuhrwelle (20, 200) gehalten wird, und das Schlüsselglied eine verriegelte Stellung hat, in der das Schlüsselglied über die Zufuhrwelle hinaus und in den Schlüsselschlitz des Zufuhrkerns (30, 210) hinein vorsteht, um den Zufuhrkern mit der Zufuhrwelle zu koppeln.

24. Vorrichtung nach Anspruch 22 oder 23, bei der mindestens ein Teil des Stopfens (80, 400, 410) innerhalb des Hohlraums (260) der Zufuhrwelle (20, 200) angeordnet ist und mindestens ein Teil des Stopfens (90, 400, 420) sich über die Zufuhrwelle hinaus erstreckt, um den Zufuhrkern (30, 210) auf der Zufuhrwelle zu halten.

25. Vorrichtung nach Anspruch 24, die weiterhin einen verschiebbaren Nocken (310) aufweist, der innerhalb des Hohlraums (260) der Zufuhrwelle (20, 200) angeordnet ist, wobei der verschiebbare Nocken funktional mit dem Schlüsselglied (240, 250) und dem Stopfen (400) zusammenwirkt und wobei der verschiebbare Nocken eine eingriffsfreie Position hat, die der entriegelten Stellung des Schlüsselgliedes entspricht, und der verschiebbare Nocken eine Eingriffsposition hat, die der verriegelten Stellung des Schlüsselgliedes entspricht.

26. Vorrichtung nach Anspruch 25, bei der der verschiebbare Nocken (310) einen spitz zulaufenden Teil (370, 380) im Eingriff mit dem Schlüsselglied (240, 250) hat.

27. Verfahren zum Zuführen von Reinigungsmaterial (170), um einen Zylinder einer Druckpresse zu reinigen, das folgendes umfasst:

    In-Eingriff-Bringen eines Zufuhrkerns, auf den Reinigungsmaterial gewickelt ist, mit einer Zufuhrwelle (20, 200),
    Drehen der Zufuhrwelle, um das Reinigungsmaterial auseinander zu wickeln, das R inigungsmaterial durch in Zylinderreinigungsg - rät in Verbindung mit der Druckpress lauf n zu lassen, **dadurch gek nnz ichnet, da s** das In-Eingriff-Bringen des Zufuhrkerns mit der Zufuhrwell umfasst, die Zufuhrwelle durch einen Schlosseingriff iner inner n Schlüsselstruktur auf dem Zufuhrkern in eine entsprechende äußere Schlüsselstruktur auf der Zufuhrwelle, gestaltet, eine Relativdrehung dazwischen bei Drehung der Welle zu verhindern, zu koppeln.

28. Verfahren nach Anspruch 27, bei dem das In-Eingriff-Bringen des Zufuhrkerns (30, 210) mit der Zufuhrwelle (20, 200) umfasst, den Zufuhrkern auf einer Zufuhrwelle anzubringen, die eine äußere Struktur mit einem polygonalen Querschnitt hat.

29. Verfahren nach einem der Ansprüche 27 oder 28, das weiterhin folgendes umfasst: innerhalb von ersten und zweiten (60, 70) Enden der Zufuhrwelle (20, 200) Stopfen (80, 90) anzuordnen, um zu verhindern, dass der Zufuhrkern (30, 210) während Drehung der Zufuhrwelle von der Zufuhrwelle abrutscht.

30. Verfahren nach einem der Ansprüche 27 bis 29, das weiterhin folgendes umfasst: das auseinander gewickelte Reinigungsmaterial (170) auf einer rotierenden Aufnahmerolle (40) zu empfangen, die einen äußeren Querschnitt mit einer polygonalen Form hat.

31. Verfahren nach Anspruch 27, bei dem das In-Eingriff-Bringen des Zufuhrkerns (30, 210) mit einer Zufuhrwelle (20, 200) folgendes umfasst:

    den Zufuhrkern um die Reinigungsmaterial-Zufuhrwelle (20, 200) herum anzuordnen, und
    einen Schlüssel in Eingriff zu bringen, um den Reinigungsmaterial-Zufuhrkern mit der Reinigungsmaterial-Zufuhrwelle zu koppeln.

Revendications

1. Appareil d'alimentation en matériau de nettoyage pour un cylindre de presse, comprenant : un arbre d'alimentation (20, 200), une partie centrale d'alimentation, et un matériau (170) de nettoyage de feuille enroulé sur la partie centrale d'alimentation, la partie centrale d'alimentation (30, 210) étant disposée sur l'arbre d'alimentation et couplée pour tourner avec celui-ci, **caractérisé en ce que** la partie centrale d'alimentation est couplée à l'arbre d'alimentation par l'intermédiaire d'une coopération à enclenchement d'une structure de clé interne sur la parti centrale d'alimentation avec une structure correspondante de clé xtérieur sur l'arbre d'alimentation, configuré pour empêch r une rotation

relative entre elles lors de la rotation d l'arbre.

2. Appareil selon la rev ndication 1, dans lequel la structure (190) de clé int m sur la partie centrale d'alimentation (30, 210) a une coupe transversale avec un point central t un périmètr , le périmètre comportant au moins deux points disposés à des distances différentes du centre.

3. Appareil selon la revendication 1, dans lequel la partie centrale d'alimentation (30, 210) a une structure extérieure (180) avec une forme extérieure en coupe transversale qui est différente de la forme interne en coupe transversale de la partie centrale d'alimentation.

4. Appareil selon la revendication 1 ou 2, dans lequel la structure (190) de clé interne de la partie centrale d'alimentation (30, 210) a une forme interne polygonale en coupe transversale.

5. Appareil selon la revendication 4, dans lequel la forme interne polygonale en coupe transversale (190) de la partie centrale d'alimentation (30, 210) a trois, quatre, cinq ou six côtés.

6. Appareil selon la revendication 2 ou 3, dans lequel la partie centrale d'alimentation a une structure interne de clé (190) d'une coupe transversale ovale.

7. Appareil selon l'une quelconque des revendications 2 à 6, dans lequel la structure de clé extérieure de l'arbre d'alimentation (20, 200) a une coupe transversale avec un point central et un périmètre, le périmètre comportant au moins deux points disposés à des distances différentes du centre.

8. Appareil selon la revendication 7, dans lequel l'arbre d'alimentation (20, 200) a une structure extérieure avec une forme en coupe transversale extérieure polygonale.

9. Appareil selon l'une quelconque des revendications précédentes, comprenant en outre un boîtier (50) dans lequel l'arbre d'alimentation (20, 200) est monté de manière à pouvoir tourner et un arbre d'enroulement (40), l'arbre d'enroulement étant monté de manière à pouvoir tourner en communication avec le boîtier.

10. Appareil selon la revendication 9, dans lequel l'arbre d'enroulement (40) a une coupe transversale avec un point central et un périmètre, le périmètre comportant au moins deux points disposés à des distances différentes du centre.

11. Appareil selon la r vendication 9 ou 10, dans lequel l'arbre d'alimentation (20, 200) a une structur x- térieure avec une coupe transversale xtérieur polygonale.

12. Appareil selon la revendication 11, dans lequel la coupe transversale extérieure polygonal a trois, quatre, cinq ou six côtés.

13. Appareil selon la revendication 10, dans lequel l'arbre d'alimentation (20, 200) a une structure extérieure avec une coupe transversale extérieure ovale.

14. Appareil selon l'une quelconque des revendications 9 à 13, dans lequel le boîtier (50) comprend une fente de réception et un doigt de verrouillage mobile, le doigt de verrouillage mobile ayant une position non verrouillée et une position verrouillée, l'arbre d'enroulement (40) étant couplé au boîtier de manière à pouvoir tourner par l'intermédiaire de la fente de réception lorsque le doigt de verrouillage mobile est dans la position verrouillée du doigt de verrouillage.

15. Appareil selon l'une quelconque des revendications 9 à 14, dans lequel l'arbre d'enroulement (40) est configuré pour recevoir le matériau de nettoyage (170) après que le matériau de nettoyage a été utilisé pour nettoyer la presse d'impression.

16. Appareil selon l'une quelconque des revendications précédentes, dans lequel la partie centrale d'alimentation (30, 210) a des première et deuxième extrémités (150, 160), l'arbre d'alimentation (20) a des première et deuxième extrémités (60, 70) et comprend en outre une première fiche (80, 410) montée sur la première extrémité (60) de l'arbre, et une deuxième fiche (90, 420) montée sur la deuxième extrémité (70) de l'arbre, une partie de chacune des fiches étant disposée à l'intérieur de l'arbre d'alimentation, et une partie de chacune des fiches étant disposée à l'extérieur de l'arbre d'alimentation et s'étendant au-delà de la périphérie de l'arbre d'alimentation pour empêcher la partie centrale d'alimentation de glisser hors de l'arbre d'alimentation.

17. Appareil selon l'une quelconque des revendications précédentes, dans lequel le matériau (170) de nettoyage de cylindre de presse est en tissu.

18. Appareil selon l'une quelconque des revendications 1 à 16, dans lequel le matériau (170) de nettoyage de cylindre de presse est en papier.

19. Appareil selon la revendication 1, dans lequel les structur s intern et extérieure de clé comprennent un élément formant clé (240, 250) et un réceptacle correspondant (220, 230) pour l'élément formant

clé, l'élément formant clé étant mobile dans la coopération d'enclenchement et en dehors de celle-ci, avec le réceptacle.

20. Appareil selon la revendication 19, dans lequel l'élément formant clé est configuré pour passer à travers une paroi latérale de l'arbre d'alimentation (20, 200).

21. Appareil selon la revendication 19 ou 20, dans lequel le réceptacle (220, 230) de clé est une fente découpée dans la partie centrale d'alimentation (30, 210).

22. Appareil selon l'une quelconque des revendications 19 à 21, dans lequel l'arbre d'alimentation (20, 200) comporte un orifice interne (260) formé au moins par une paroi latérale de l'arbre d'alimentation, l'arbre d'alimentation comportant une fente (270, 280) pour clé passant par l'orifice interne à travers la paroi latérale.

23. Appareil selon la revendication 22, dans lequel au moins une partie de l'élément formant clé (240, 250) peut être disposée dans la fente (270, 280) pour clé, l'élément formant clé ayant une position non verrouillée dans laquelle l'élément formant clé est maintenu à l'intérieur d'une surface extérieure de l'arbre d'alimentation (20, 200) et l'élément formant clé ayant une position verrouillée dans laquelle l'élément formant clé dépasse au-delà de l'arbre d'alimentation et dans la fente pour clé de la partie centrale d'alimentation (30, 210) pour coupler la partie centrale d'alimentation à l'arbre d'alimentation.

24. Appareil selon la revendication 22 ou 23, dans lequel au moins une partie d'une fiche (80, 400, 410) est disposée à l'intérieur de l'orifice (260) de l'arbre d'alimentation (20, 200) et au moins une partie de la fiche (90, 400, 420) s'étend au-delà de l'arbre d'alimentation pour maintenir la partie centrale d'alimentation (30, 210) sur l'arbre d'alimentation.

25. Appareil selon la revendication 24, comprenant en outre une came (310) pouvant glisser disposée à l'intérieur de l'orifice (260) de l'arbre d'alimentation (20, 200), la came pouvant glisser étant associée de manière opérationnelle avec l'élément formant clé (240, 250) et la fiche (400), la came pouvant glisser ayant une position non engagée correspondant à la position non verrouillée de l'élément formant clé et la came pouvant glisser ayant une position engagée correspondant à la position verrouillée de l'élément formant clé.

26. Appareil selon la revendication 25, dans lequel la came pouvant glisser (310) a une partie conique (370, 380) coopérant avec l'élément formant clé (240, 250).

27. Procédé d'alimentation en matériau de nettoyage (170) pour nettoyer un cylindre de presse d'impression, comprenant :

la coopération d'une partie centrale d'alimentation sur laquelle est enroulé un matériau de nettoyage, avec un arbre d'alimentation (20, 200) ;
la rotation de l'arbre d'alimentation pour démêler le matériau de nettoyage ; et
le passage du matériau de nettoyage par un appareil de nettoyage de cylindre en communication avec la presse d'impression, **caractérisé en ce que** la coopération de la partie centrale d'alimentation avec l'arbre d'alimentation comprend le couplage de l'arbre d'alimentation par l'intermédiaire d'une coopération d'enclenchement d'une structure de clé interne sur la partie centrale d'alimentation avec une structure correspondante de clé extérieure sur l'arbre d'alimentation, configurée pour empêcher une rotation relative entre elles lors de la rotation de l'arbre.

28. Procédé selon la revendication 27, dans lequel la coopération de la partie centrale d'alimentation (30, 210) avec l'arbre d'alimentation (20, 200) comprend le montage de la partie centrale d'alimentation sur un arbre d'alimentation ayant une structure extérieure avec une coupe transversale polygonale.

29. Procédé selon la revendication 27 ou 28, comprenant en outre :

la disposition de fiches (80, 90) à l'intérieur de première et deuxième (60, 70) extrémités de l'arbre d'alimentation (20, 200) pour empêcher la partie centrale d'alimentation (30, 210) de glisser hors de l'arbre d'alimentation au cours de la rotation de l'arbre d'alimentation.

30. Procédé selon l'une quelconque des revendications 27 à 29, comprenant en outre :

la réception du matériau de nettoyage démêlé (170) sur un rouleau rotatif d'enroulement (40) ayant une coupe transversale extérieure avec une forme polygonale.

31. Procédé selon la revendication 27, dans lequel la coopération de la partie centrale d'alimentation (30, 210) avec un arbre d'alimentation (20, 200) comprend :

la disposition de la partie centrale d'alimentation autour de l'arbre d'alimentation (20, 200) en matériau de nettoyage ; et
la coopération d'une clé pour coupler la partie

centrale d'alimentation en matériau de n ttoyage à l'arbr d'alimentation en matériau de nettoyage.

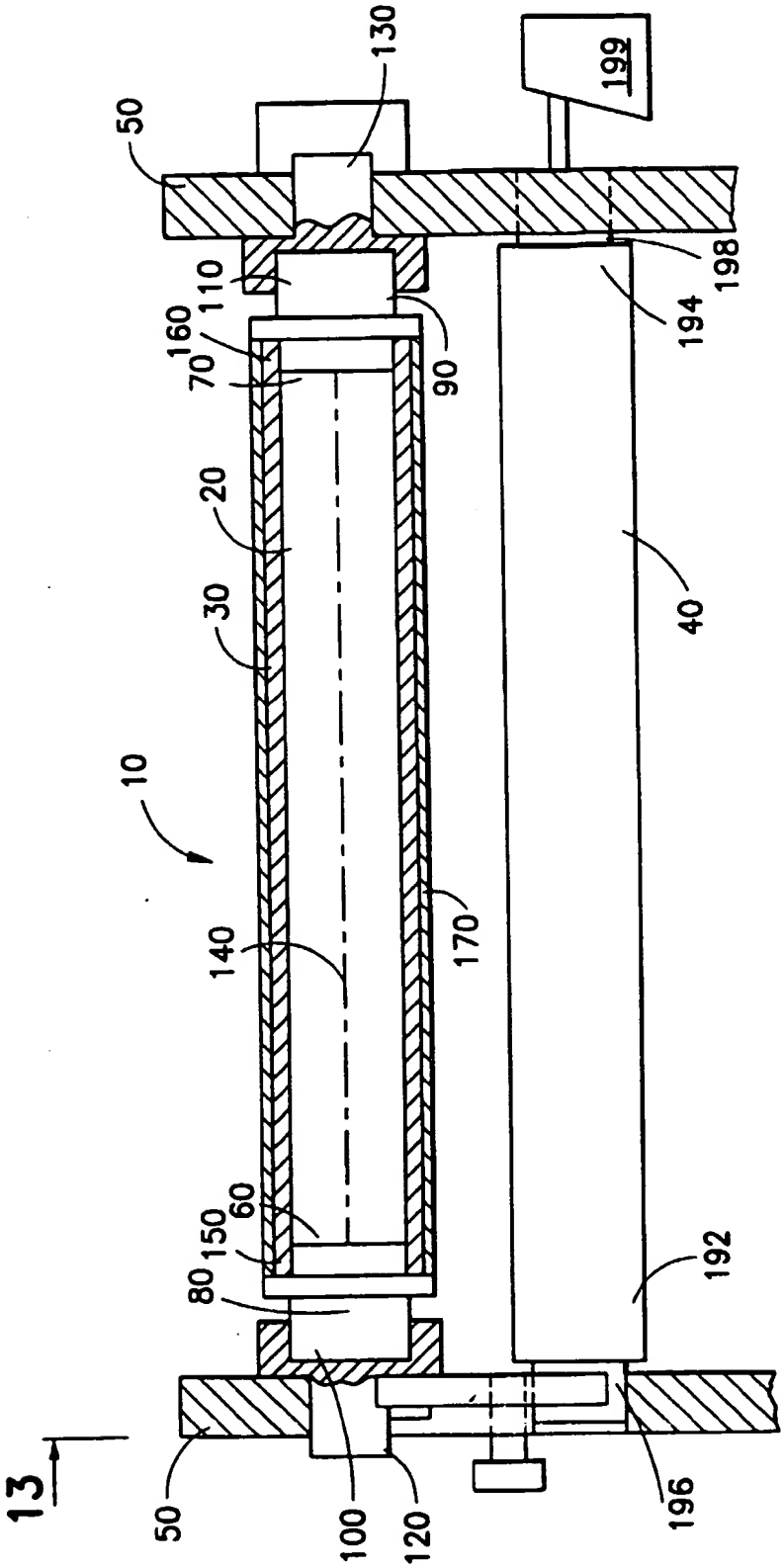
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FIG. 1

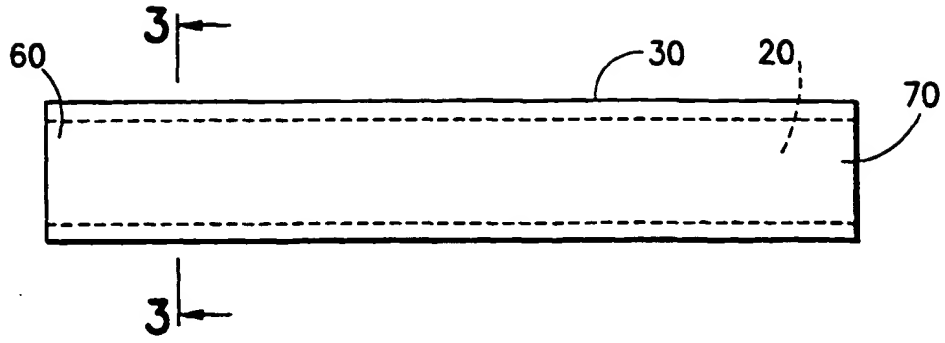

FIG. 2

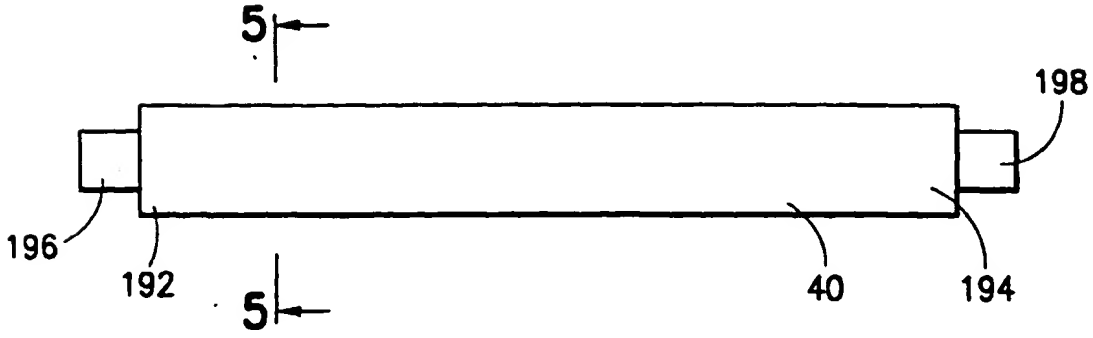

FIG. 4

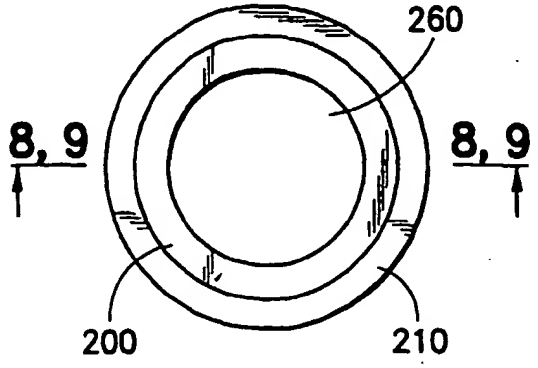

FIG. 6

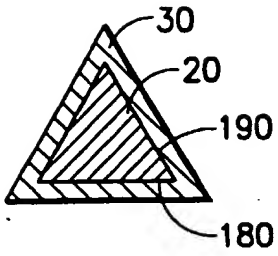

FIG. 3A

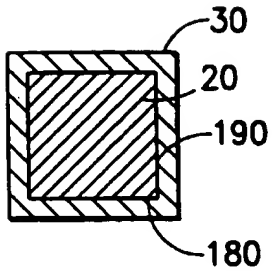

FIG. 3B

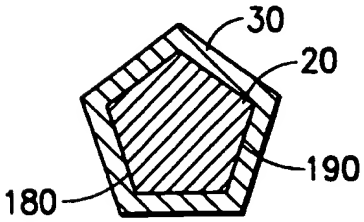

FIG. 3C

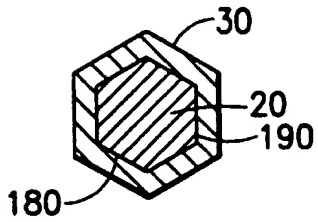

FIG. 3D

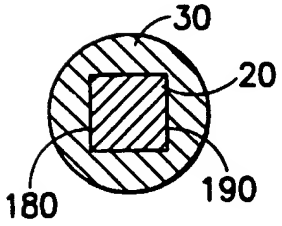

FIG. 3E

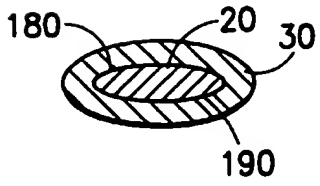

FIG. 3F

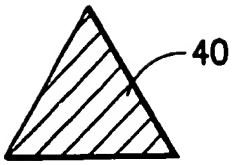

FIG. 5A

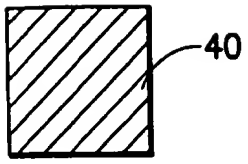

FIG. 5B

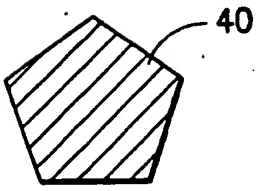

FIG. 5C

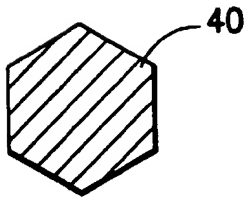

FIG. 5D

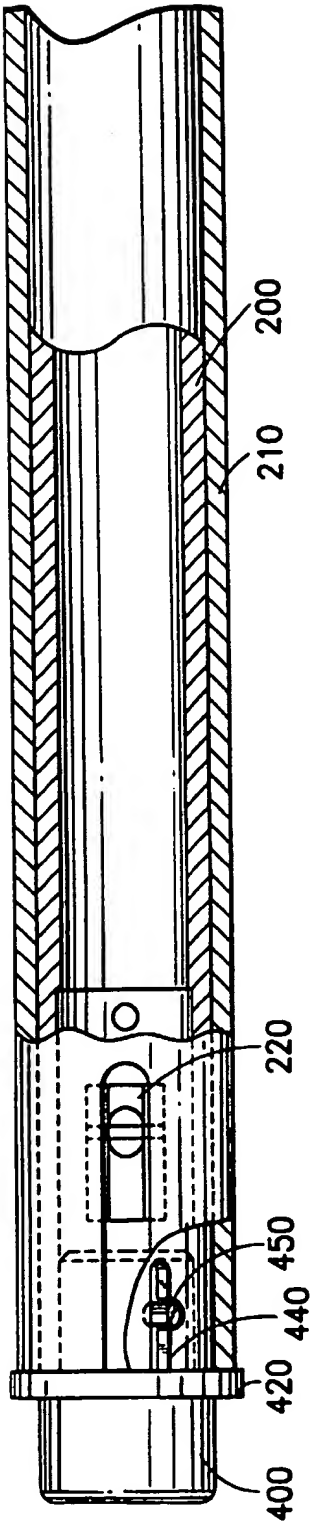
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FIG. 7

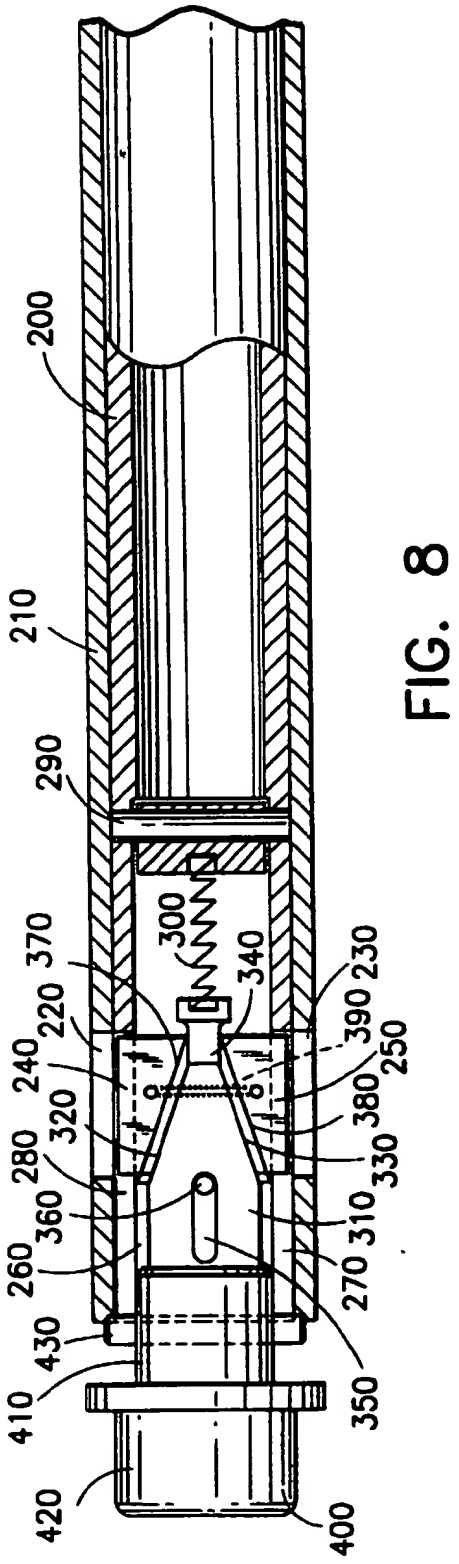
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FIG. 8

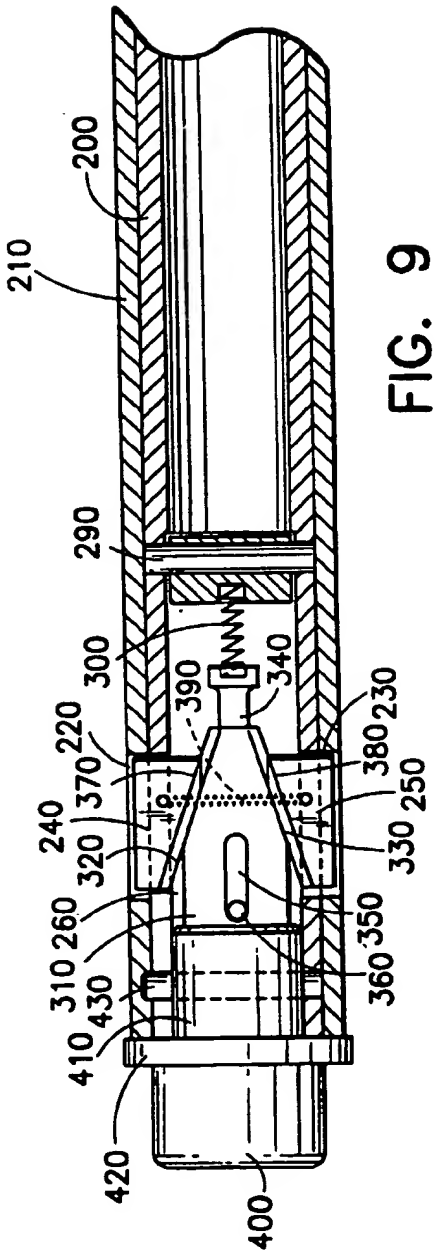
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FIG. 9

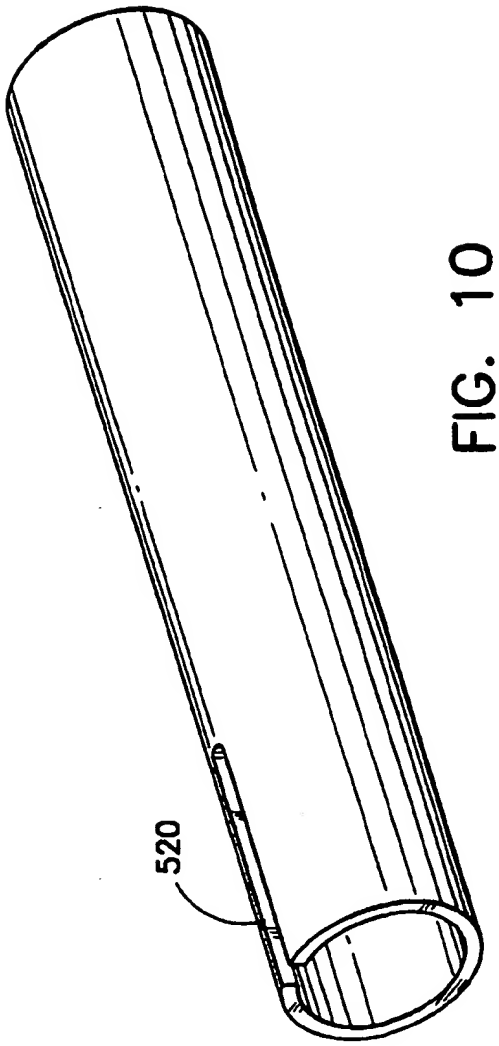
520

FIG. 10

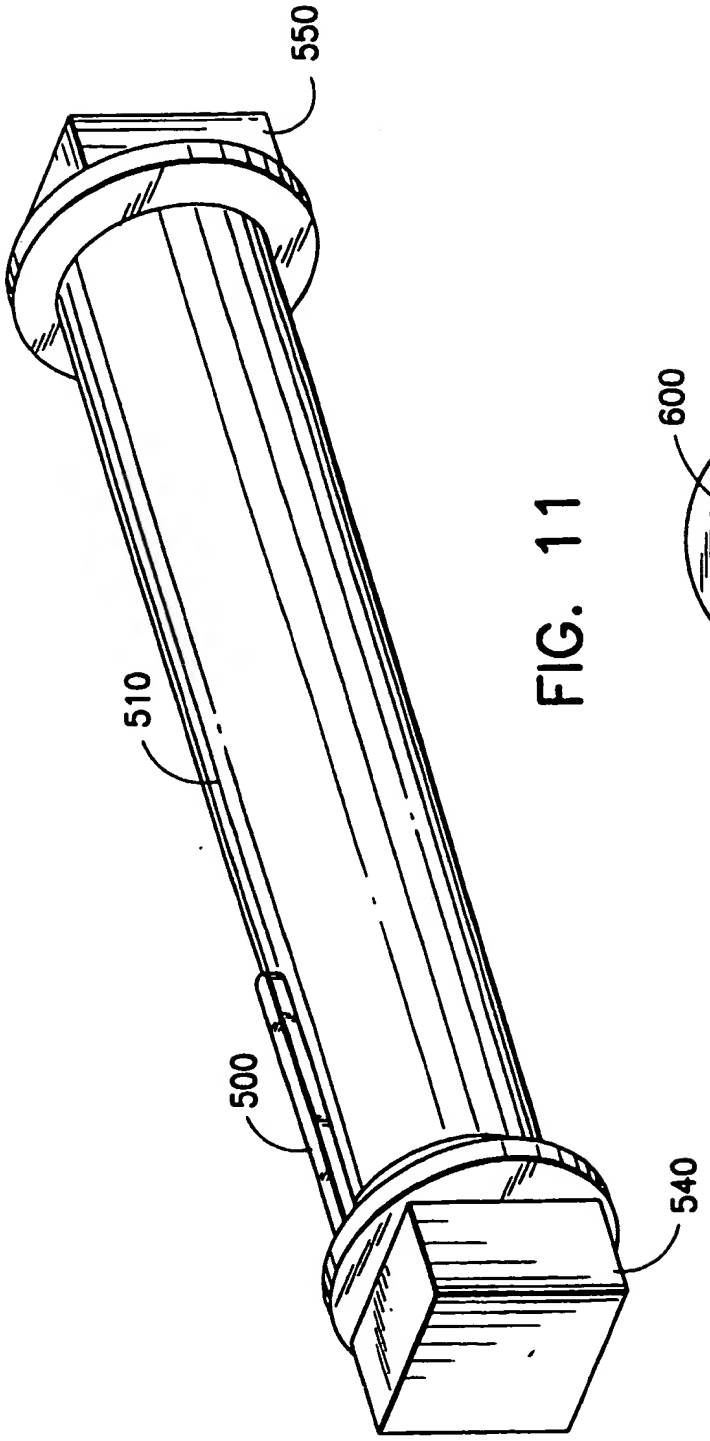

FIG. 11

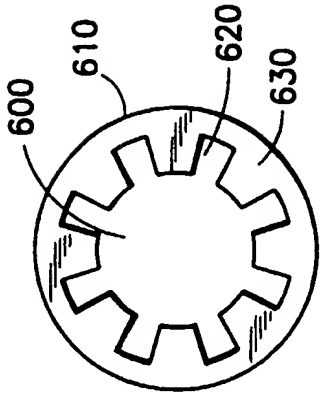

FIG. 12

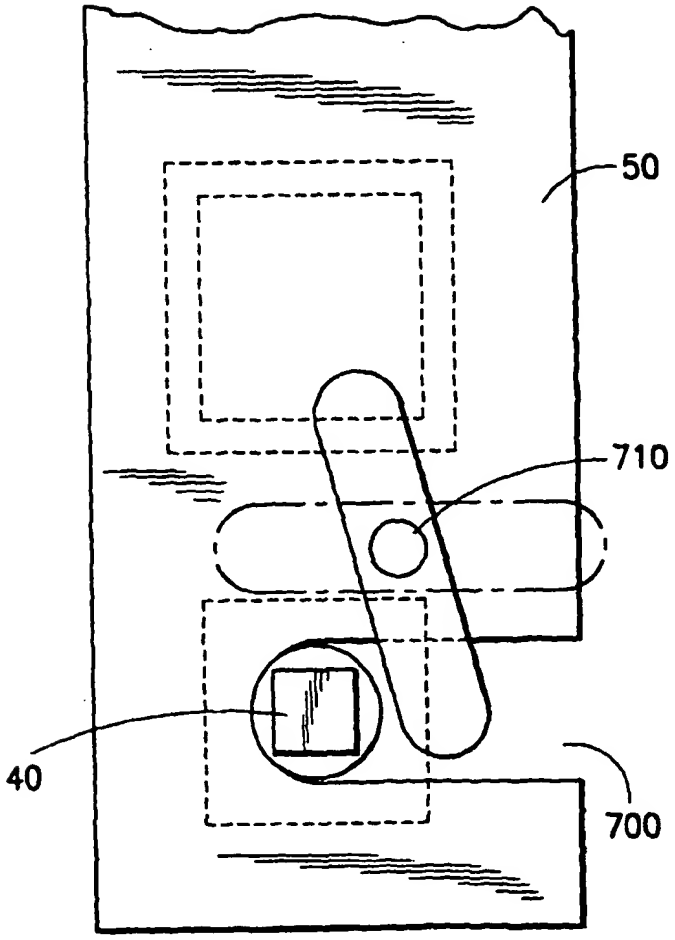

FIG. 13